

REMARKS

Claims 1-3, 7, 8, 13 and 15 have been rejected under 35 U.S.C. §102(b) as anticipated by Kiewit, while Claims 5, 10 and 17 have been rejected under 35 U.S.C. §103(a) as unpatentable over Kiewit in view of Roy (GB 2335041) and Claims 4, 9 and 16 have been rejected as unpatentable over Kiewit in view of Braathen et al (U.S. Patent No. 6,305,233). However, for the reasons set forth hereinafter, Applicants respectfully submit that all claims which remain of record in this application distinguish over the cited references, whether considered separately or in combination.

The primary Kiewit reference discloses a system in which two frequencies are sensed in order to detect a "catastrophic" leak in a sprinkler system, such as may be caused by a sprinkler nozzle being broken off. For this purpose, Kiewit provides a signal transducer 56, from which an electrical signal 66 is fed to low pass and high pass filters 72,74, as illustrated in Figure 3. See specification at Column 4, lines 34-53.

As discussed at Column 4, line 65 through Column 5, line 28, the output of the low pass filter is used to detect a flow of water in a particular zone of a multizone sprinkler system. As noted for example, at Column 5, lines 9-12, the digitized representation of the average low frequency power 88 is compared with a predetermined threshold value to confirm that water is in fact flowing through the

Serial No.: 09/942,926
Response dated December 11, 2003
Reply to Office Action: October 17, 2003

pipes. If the average low frequency acoustic power does not exceed the predetermined threshold value (such as in the case of a failure of the water supply system), an error message is generated.

After it has been determined that water is in fact flowing in the pipes, based on the low frequency acoustic power, "the ratio of the average low frequency acoustic power 88 to the average high frequency acoustic power 90 is then compared with a second predetermined threshold value". If such ratio exceeds the predetermined threshold, an alarm is triggered, and a shutdown command is sent to the system.

Claim 1 of the present application, as amended, differs from the Kiewit reference in the manner in which a leak is detected. In particular, Claim 1 recites that such determination is made by comparing the amplitudes of the respective spectral bands with predetermined values to determine a flow rate. As can be seen from the above brief summary of the Kiewit apparatus, the process for determining a leak in Kiewit comprises comparing power at one frequency with a threshold, and then comparing the ratio of the high and low frequency power values to a second threshold. The methodology therefore differs.

The difference, moreover, is important in the overall context of Kiewit, as compared to the present invention. That is, Kiewit is concerned with the sprinkler system which detects "catastrophic" leaks, in which massive amounts of water may be expected to flow. By contrast, the present invention is directed to a system which

is capable of detecting leaks at low flow rates. (See, for example, the discussion of Figure 2 at starting at page 6, line 6 of the specification; and also page 11, line 11 *et seq.*) For this purpose, as specified in Claim 1, and as discussed in detail in the specification, the present invention compares the respective amplitudes of sensed vibrations in at least two spectral bands with respective predetermined threshold values. For the reasons discussed in the specification, this technique can in fact be used to detect leaks at low flow rates.

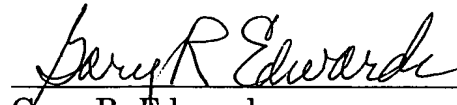
To summarize, Kiewit uses a different detection technique for a different purpose, utilizing a particular amplitude at a particular frequency, as well as a ratio of amplitudes in order to trigger an alarm indicating a high flow rate. Because of this arrangement, Kiewit may give a false alarm because of a high flow rate condition caused, for example, by a flushing toilet cistern, which is of course not a problem in a sprinkler system, but is a situation resolved by the present invention. In short, the apparatus according to the present invention is concerned with monitoring of a system that requires a greater refinement of detection in order to avoid false alarms.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

Serial No.: 09/942,926
Response dated December 11, 2003
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If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #3036/50371).

Respectfully submitted,

A handwritten signature in cursive script, reading "Gary R. Edwards", is written over a horizontal line.

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Attachment – Proposed Changes to Figure 1

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